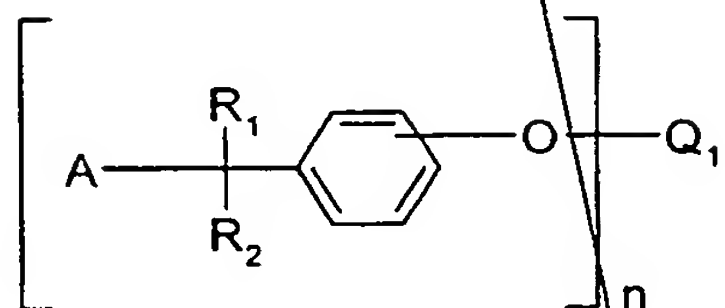
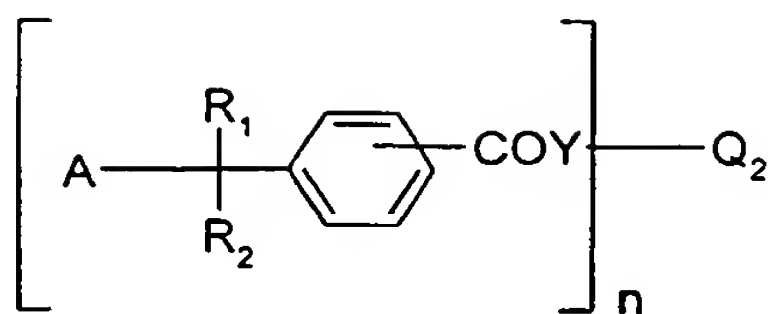


Claims

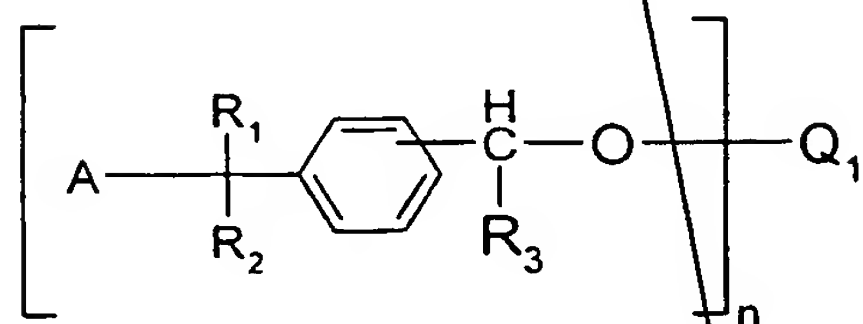
1. A compound of formula (I) (II) or (III)



(I)



(II)



(III)

wherein

R₁ and R₂ are independently of each other hydrogen, C₁-C₁₈alkyl, C₃-C₁₈alkenyl, C₃-C₁₈alkinyl or phenyl which are unsubstituted or substituted by NO₂, halogen, amino, hydroxy, cyano, carboxy, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylamino or di(C₁-C₄alkyl)amino;

A is a group capable of forming a stable free nitroxyl radical A•, which is bound via its oxygen atom to the carbon atom;

Y is O, NR₃ or CHR₃-X_a, wherein X_a is O, S or NR₃;

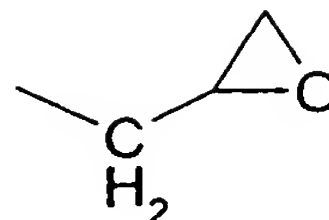
R₃ is hydrogen, C₁-C₁₈alkyl, C₃-C₁₈alkenyl, C₃-C₁₈alkinyl or phenyl which are unsubstituted or substituted by NO₂, halogen, amino, hydroxy, cyano, carboxy, C₁-C₄alkoxy, C₁-C₄alkylthio, C₁-C₄alkylamino or di(C₁-C₄alkyl)amino;

Q₁ is an organic or inorganic radical, derived from a compound having at least one functional group being capable of reacting with a hydroxy group;

Q₂ is an organic radical derived from a mono or polyfunctional alcohol, mono or polyfunctional aminoalcohol, mono or polyfunctional amine mono or polyfunctional mercaptane, mono or polyfunctional phenol or mono or polyfunctional thiophenol; and

n is a number from 1 to 20;

with the proviso, that in formula (I) if n is 1, Q₁ is not



, or if n is 2, R₁ is H

and R₂ is -CH₂-O-tert.butyl, A is not 2,2,6,6-tetramethylpiperidine or 2,2,6,6-tetramethylpiperidine-4-carboxylic acid.

2. A compound of formula (I) or (III), wherein Q₁ is derived from an unsubstituted or substituted triazine, from a mono or multifunctional alkylating agent, from a mono or polycarboxylic acid or acid derivative, from a mono or polyepoxide, from a mono or polyisocyanate or from POCl₃, SO₂Cl₂, BCl₃ or SiCl₄.

3. A compound of formula (I), (II) or (III) according to claim 1, wherein R₁ and R₂ are independently of each other hydrogen, C₁-C₁₂alkyl, C₃-C₁₂alkenyl or phenyl.

4. A compound of formula (II) according to claim 1, wherein Y is O or NR₃.

5. A compound of formula (I), (II) or (III) according to claim 1, wherein n is a number from 2-10.

6. A compound of formula (I) or (III) according to claim 1, wherein Q₁ is an organic radical derived from an unsubstituted or substituted triazine, from a mono or polycarboxylic acid or acid derivative, from a mono or multifunctional alkylating agent or from a mono or polyisocyanate.

7. A compound of formula (I) or (III) according to claim 6, wherein Q₁ is an organic radical derived from an unsubstituted or substituted triazine, from a polycarboxylic acid or polycarboxylic acid derivative, having 2-6 carboxyl groups, from a multifunctional alkylating agent having 2-6 functional groups or from a polyisocyanate, having 2-6 isocyanate groups.

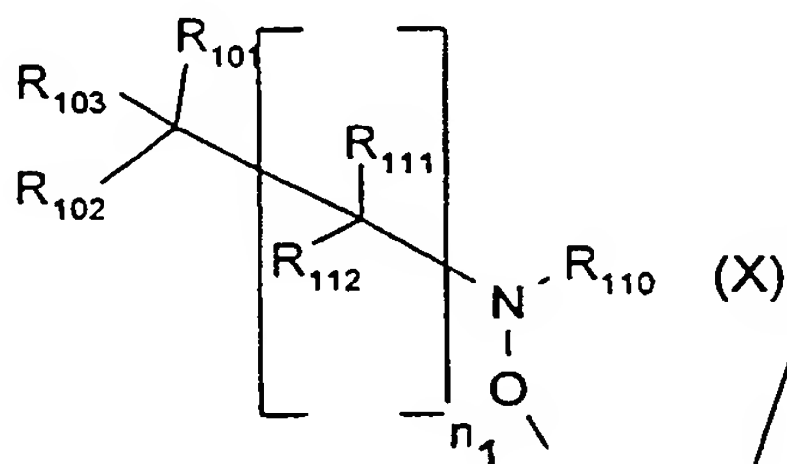
8. A compound of formula (II) according to claim 1, wherein Q₂ is an organic radical derived from a polyfunctional alcohol, a polyfunctional aminoalcohol or a polyfunctional amine.

9. A compound of formula (II) according to claim 8, wherein Q_2 is a radical derived from a polyalcohol having 2-6 hydroxy groups, a polyaminoalcohol having 2-6 amino and/or hydroxy groups, or a polyamine having 2-6 amine groups.

10. A compound of formula (I), (II) or (III) according to claim 1, wherein the radical $A\bullet$ derived from the group A is a stable open chain nitroxyl radical or a cyclic nitroxyl radical.

11. A compound of formula (I), (II) or (III) according to claim 1, wherein

A is a group of formula (X)



wherein n_1 is 0 or 1

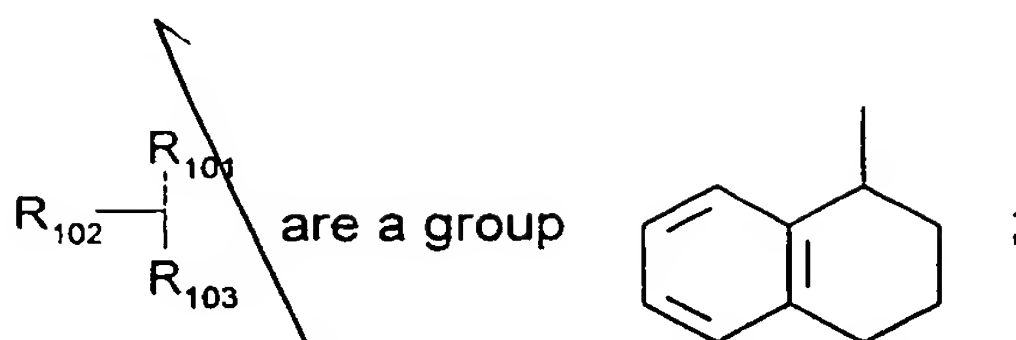
R_{101} , R_{102} , R_{103} are each independently of one another hydrogen, halogen, NO_2 , cyano, $-CONR_{105}R_{106}$, $-(R_{109})COOR_{104}$, $-C(O)-R_{107}$, $-OR_{108}$, $-SR_{108}$, $-NHR_{108}$, $-N(R_{108})_2$, carbamoyl, $di(C_1-C_{18}alkyl)carbamoyl$, $-C(=NR_{105})(NHR_{106})$;

unsubstituted $C_1-C_{18}alkyl$, $C_2-C_{18}alkenyl$, $C_2-C_{18}alkynyl$, $C_7-C_9phenylalkyl$, $C_3-C_{12}cycloalkyl$ or $C_3-C_{12}cycloalkyl$ containing at least one nitrogen or oxygen atom; or

$C_1-C_{18}alkyl$, $C_2-C_{18}alkenyl$, $C_2-C_{18}alkynyl$, $C_7-C_9phenylalkyl$, $C_3-C_{12}cycloalkyl$ or $C_3-C_{12}cycloalkyl$ containing at least one nitrogen or oxygen atom, which are substituted by NO_2 , halogen, amino, hydroxy, cyano, carboxy, $C_1-C_4alkoxy$, $C_1-C_4alkylthio$, $C_1-C_4alkylamino$ or $di(C_1-C_4alkyl)amino$; or

phenyl, which is unsubstituted or substituted by C_1-C_4alkyl , $C_1-C_4alkoxy$, $C_1-C_4alkylthio$, halogen, cyano, hydroxy, carboxy, $C_1-C_4alkylamino$ or $di(C_1-C_4alkyl)amino$;

or R_{102} and R_{103} , together with the linking carbon atom, form a $C_3-C_{12}cycloalkyl$ radical, a $(C_4-C_{12}cycloalkanon)-yl$ radical or a $C_3-C_{12}cycloalkyl$ radical containing at least one O atom and/or a NR_{108} group; or if n_1 is 1



R_{104} is hydrogen, C_1 - C_{18} alkyl, phenyl, an alkali metal cation or a tetraalkylammonium cation;
 R_{105} and R_{106} are hydrogen, C_1 - C_{18} alkyl, C_2 - C_{18} alkyl which is substituted by at least one hydroxy group or, taken together, form a C_2 - C_{12} alkylene bridge or a C_2 - C_{12} -alkylene bridge interrupted by at least one O or/and NR_{108} atom;

R_{107} is hydrogen, C_1 - C_{18} alkyl or phenyl;

R_{108} is hydrogen, C_1 - C_{18} alkyl or C_2 - C_{18} alkyl which is substituted by at least one hydroxy group;

R_{109} is C_1 - C_{12} alkylene or a direct bond;

R_{110} is C_4 - C_{18} alkyl bound via a tertiary C-atom to the nitrogen atom, C_9 - C_{11} phenylalkyl, C_3 - C_{12} cycloalkyl or C_3 - C_{12} cycloalkyl containing at least one nitrogen or oxygen atom; or
 C_4 - C_{18} alkyl bound via a tertiary C-atom to the nitrogen atom, C_9 - C_{11} phenylalkyl, C_3 - C_{12} cycloalkyl or C_3 - C_{12} cycloalkyl containing at least one nitrogen or oxygen atom, which are substituted by NO_2 , halogen, amino, hydroxy, cyano, carboxy, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, C_1 - C_4 alkylamino or di(C_1 - C_4 alkyl)amino; or

phenyl, naphthyl, which are unsubstituted or substituted by C_1 - C_4 alkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, halogen, cyano, hydroxy, carboxy, C_1 - C_4 alkylamino or di(C_1 - C_4 alkyl)amino;

if n_1 is 1

R_{111} is C_1 - C_{18} alkyl, C_7 - C_9 phenylalkyl, C_3 - C_{12} cycloalkyl or C_3 - C_{12} cycloalkyl containing at least one nitrogen or oxygen atom; or

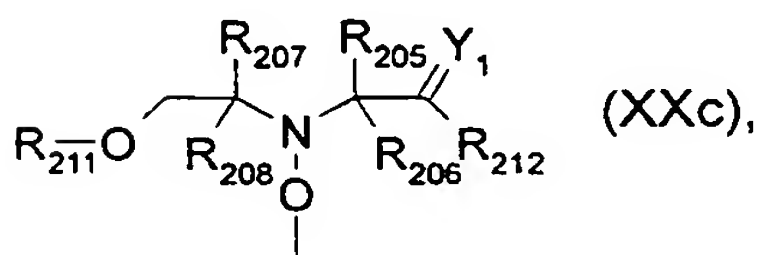
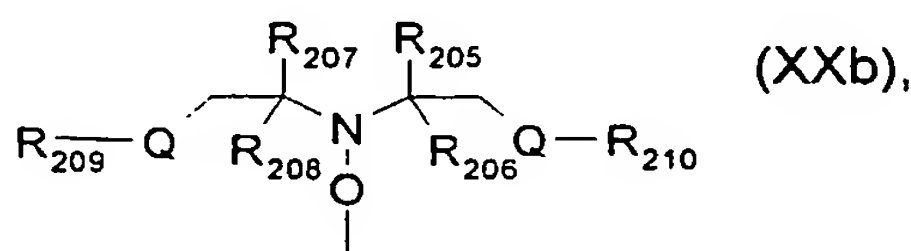
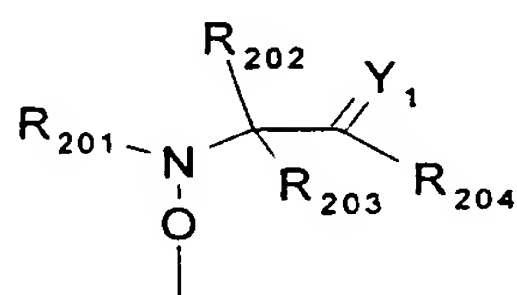
C_1 - C_{18} alkyl, C_7 - C_9 phenylalkyl, C_3 - C_{12} cycloalkyl or C_3 - C_{12} cycloalkyl containing at least one nitrogen or oxygen atom, which are substituted by NO_2 , halogen, amino, hydroxy, cyano, carboxy, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, C_1 - C_4 alkylamino or di(C_1 - C_4 alkyl)amino; or
 phenyl, naphthyl, which are unsubstituted or substituted by C_1 - C_4 alkyl, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, halogen, cyano, hydroxy, carboxy, C_1 - C_4 alkylamino or di(C_1 - C_4 alkyl)amino; or
 a polycyclic cycloaliphatic ring system or a polycyclic cycloaliphatic ring system with at least one di- or trivalent nitrogen atom; or

R_{110} and R_{111} together form a C_2 - C_{12} alkylene bridge, a C_3 - C_{12} alkylene bridge or a C_2 - C_{12} alkylene bridge which is interrupted by at least one O or N atom, which bridges are unsubstituted or substituted with C_1 - C_{18} alkyl, hydroxy(C_1 - C_4)alkyl, phenyl, C_7 - C_9 phenylalkyl, NO_2 , halogen, amino, hydroxy, cyano, carboxy, C_1 - C_4 alkoxy, C_1 - C_4 alkylthio, C_1 - C_4 alkylamino or di(C_1 - C_4 alkyl)amino,

B

R_{112} is hydrogen, $-(R_{109})COOR_{104}$, cyano, $-OR_{108}$, $-SR_{108}$, $-NHR_{108}$, $-N(R_{108})_2$, $-NH-C(O)-R_{108}$, unsubstituted C_1-C_{18} alkyl, C_2-C_{18} alkenyl, C_2-C_{18} alkynyl, C_7-C_9 phenylalkyl, C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkyl containing at least one nitrogen or oxygen atom; or C_1-C_{18} alkyl, C_2-C_{18} alkenyl, C_2-C_{18} alkynyl, C_7-C_9 phenylalkyl, C_3-C_{12} cycloalkyl or C_3-C_{12} cycloalkyl containing at least one nitrogen or oxygen atom, which are substituted by NO_2 , halogen, amino, hydroxy, cyano, carboxy, C_1-C_4 alkoxy, C_1-C_4 alkylthio, C_1-C_4 alkylamino or $di(C_1-C_4$ alkyl)amino; or phenyl, naphthyl, which are unsubstituted or substituted by C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 alkylthio, halogen, cyano, hydroxy, carboxy, C_1-C_4 alkylamino, $di(C_1-C_4$ alkyl)amino; or R_{111} and R_{112} together with the linking carbon atom form a C_3-C_{12} cycloalkyl radical;

or A is a group of formula XXa, XXb or XXc



wherein

Y_1 is O or CH_2 ;

Q is O or NR_{220} , wherein R_{220} is hydrogen or C_1-C_{18} alkyl;

R_{201} is tertiary C_4-C_{18} alkyl or phenyl, which are unsubstituted or substituted by halogen, OH, $COOR_{221}$ or $C(O)-R_{222}$ wherein R_{221} is hydrogen, an alkali metal atom or C_1-C_{18} alkyl and R_{222} is C_1-C_{18} alkyl; or

R_{201} is C_5-C_{12} cycloalkyl, C_5-C_{12} cycloalkyl which is interrupted by at least one O or N atom, a polycyclic alkyl radical or a polycyclic alkyl radical which is interrupted by at least one O or N atom;

R_{202} and R_{203} are independently C_1-C_{18} alkyl, benzyl, C_5-C_{12} cycloalkyl or phenyl, which are unsubstituted or substituted by halogen, OH, $COOR_{221}$ or $C(O)-R_{222}$ or together with the carbon atom form a C_5-C_{12} cycloalkyl ring;

if Y_1 is O,

R_{204} and R_{212} are OH, O(alkali-metal) C_1 - C_{18} alkoxy, benzyloxy, $NR_{223}R_{224}$, wherein R_{223} and R_{224} are independently from each other hydrogen, C_1 - C_{18} alkyl or phenyl, which are unsubstituted or substituted by halogen, OH, $COOR_{221}$ or $C(O)-R_{222}$;

if Y_1 is CH_2 ,

R_{204} is OH, C_1 - C_{18} alkoxy, benzyloxy, $O-C(O)-(C_1-C_{18})$ alkyl or $NR_{223}R_{224}$;

R_{212} are a group $O(O)R_{225}$, wherein R_{225} is OH, C_1 - C_{18} alkoxy, benzyloxy, $NR_{223}R_{224}$, wherein R_{223} and R_{224} are independently from each other hydrogen, C_1 - C_{18} alkyl or phenyl, which are unsubstituted or substituted by halogen, OH, $COOR_{221}$ or $C(O)-R_{222}$;

R_{205} , R_{206} , R_{207} and R_{208} are independently of each other C_1 - C_{18} alkyl, C_5 - C_{12} cycloalkyl or phenyl; or

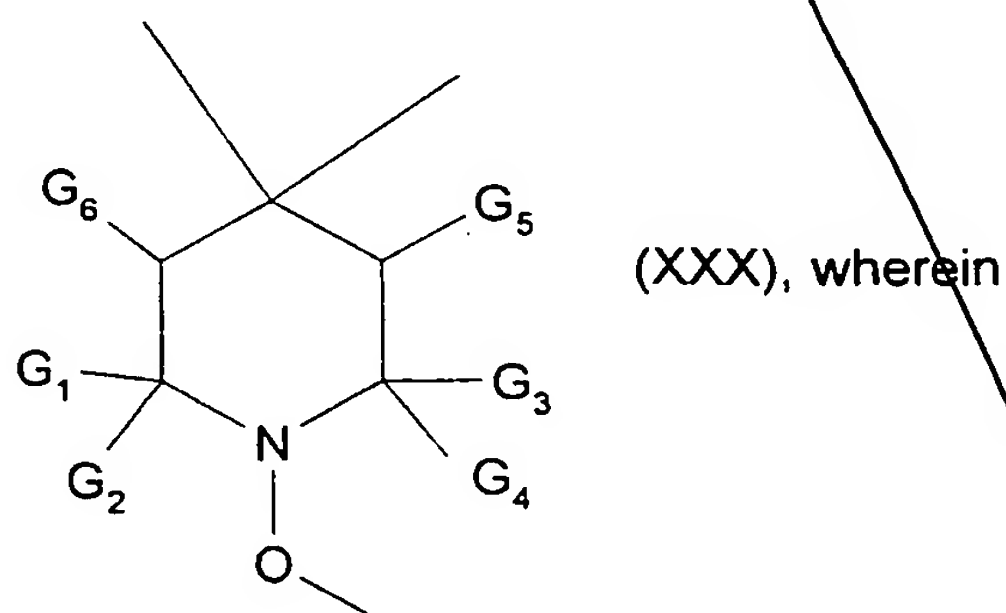
R_{205} and R_{206} and/or R_{207} and R_{208} together with the carbon atom form a C_5 - C_{12} cycloalkyl ring;

R_{209} and R_{210} are independently of each other hydrogen, formyl, C_2 - C_{18} alkylcarbonyl, benzoyl, C_1 - C_{18} alkyl, C_5 - C_{12} cycloalkyl, C_5 - C_{12} cycloalkyl which is interrupted by at least one O or N atom, benzyl or phenyl which are unsubstituted or substituted by halogen, OH, $COOR_{221}$ or

$C(O)-R_{222}$;

R_{211} , is formyl, C_2 - C_{18} alkylcarbonyl, benzoyl, C_1 - C_{18} alkyl, C_5 - C_{12} cycloalkyl, C_5 - C_{12} cycloalkyl which is interrupted by at least one O or N atom, benzyl or phenyl which are unsubstituted or substituted by halogen, OH, $COOR_{221}$ or $C(O)-R_{222}$.

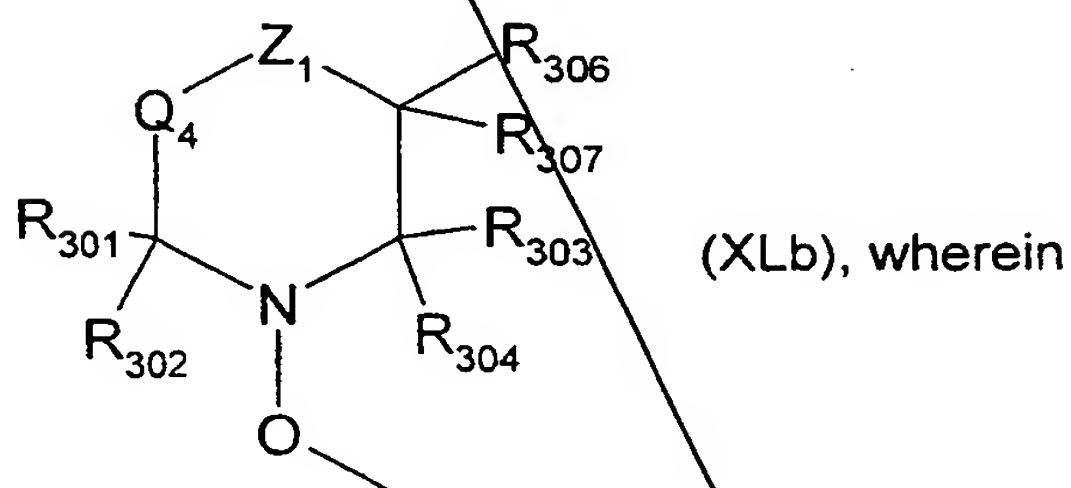
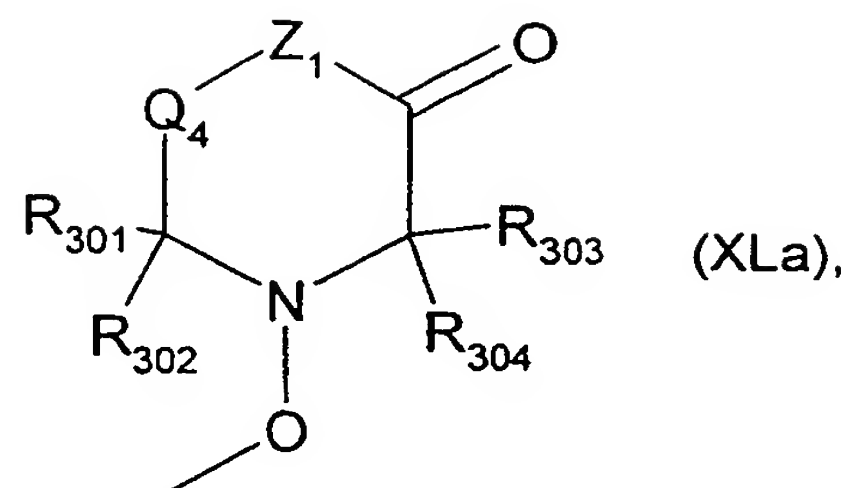
or A is a group containing a structural element of formula (XXX)



G_1 , G_2 , G_3 , G_4 are independently C_1 - C_6 alkyl or G_1 and G_2 or G_3 and G_4 , or G_1 and G_2 and G_3 and G_4 together form a C_5 - C_{12} cycloalkyl group;

G_5 , G_6 independently are H, C_1 - C_{18} alkyl, phenyl, naphthyl or a group $COOC_1$ - C_{18} alkyl;

or A is a group of formula (XLa) or (XLb)



R_{301} , R_{302} , R_{303} and R_{304} independently of each other are C_1 - C_{18} alkyl, C_3 - C_{18} alkenyl, C_3 - C_{18} alkinyl, C_1 - C_{18} alkyl, C_3 - C_{18} alkenyl, C_3 - C_{18} alkinyl which are substituted by OH, halogen or a group $-O-C(O)-R_{305}$, C_2 - C_{18} alkyl which is interrupted by at least one O atom and/or NR_{305} group, C_3 - C_{12} cycloalkyl or C_6 - C_{10} aryl or R_{301} and R_{302} and/or R_{303} and R_{304} together with the linking carbon atom form a C_3 - C_{12} cycloalkyl radical;

R_{305} , R_{306} and R_{307} independently are hydrogen, C_1 - C_{18} alkyl or C_6 - C_{10} aryl;

Z_1 is O or NR_{308} ;

R_{308} is hydrogen, OH, C_1 - C_{18} alkyl, C_3 - C_{18} alkenyl, C_3 - C_{18} alkinyl, C_1 - C_{18} alkyl, C_3 - C_{18} alkenyl, C_3 - C_{18} alkinyl which are substituted by one or more OH, halogen or a group $-O-C(O)-R_{305}$, C_2 - C_{18} alkyl which is interrupted by at least one O atom and/or NR_{305} group, C_3 - C_{12} cycloalkyl or C_6 - C_{10} aryl, C_7 - C_9 phenylalkyl, C_5 - C_{10} heteroaryl, $-C(O)-C_1$ - C_{18} alkyl, $-O-C_1$ - C_{18} alkyl or $-COOC_1$ - C_{18} alkyl;

Q_4 is a direct bond or a divalent radical $CR_{309}R_{310}$, $CR_{309}R_{310}-CR_{311}R_{312}$,

$CR_{309}R_{310}CR_{311}R_{312}CR_{313}R_{314}$, $C(O)$ or $CR_{309}R_{310}C(O)$, wherein R_{309} , R_{310} , R_{311} , R_{312} , R_{313} and R_{314} are independently hydrogen, phenyl or C_1 - C_{18} alkyl.

12. A compound of formula (I) or (II) according to claim 11, wherein A is a group of formula (X)

n_1 is 1

R₁₀₁ is cyano;

R₁₀₂ and R₁₀₃ are each independently of one another unsubstituted C₁-C₁₂alkyl or phenyl;
or R₁₀₂ and R₁₀₃, together with the linking carbon atom, form a C₅-C₇ cycloalkyl radical;

R₁₁₀ is C₄-C₁₂alkyl bound via a tertiary C-atom to the nitrogen atom, C₉-C₁₁phenylalkyl or phenyl;

R₁₁ is C₁-C₁₈alkyl, C₇-C₉phenylalkyl or C₃-C₁₂cycloalkyl; or

R₁₁₀ and R₁₁₁ together form a C₂-C₆alkylene bridge which is unsubstituted or substituted with C₁-C₄alkyl; and

R₁₁₂ is C₁-C₄alkyl;

or wherein A is a group of formula (XXa)

R₂₀₁ is tertiary C₄-C₈alkyl;

R₂₀₂ and R₂₀₃ are methyl, ethyl or together with the carbon atom form a C₅-C₆cycloalkyl ring;

R₂₀₄ is C₁-C₁₈alkoxy, benzyloxy or NR₂₂₃R₂₂₄, wherein R₂₂₃ and R₂₂₄ are independently of each other hydrogen or C₁-C₈alkyl;

or wherein A is a group of formula (XXb), wherein Q is O;

R₂₀₅, R₂₀₆, R₂₀₇ and R₂₀₈ are independently of each other methyl or ethyl; or

R₂₀₅ and R₂₀₆ and/or R₂₀₇ and R₂₀₈ together with the carbon atom form a C₅-C₆cycloalkyl ring;

R₂₀₉ and R₂₁₀ are independently of each other formyl, C₂-C₈alkylcarbonyl, benzoyl, C₁-C₈alkyl, benzyl or phenyl;

or wherein A is a group of formula (XXc), wherein Y₁ is O;

R₂₀₅, R₂₀₆, R₂₀₇ and R₂₀₈ are independently of each other methyl or ethyl; or

R₂₀₅ and R₂₀₆ and/or R₂₀₇ and R₂₀₈ together with the carbon atom form a C₅-C₆cycloalkyl ring;

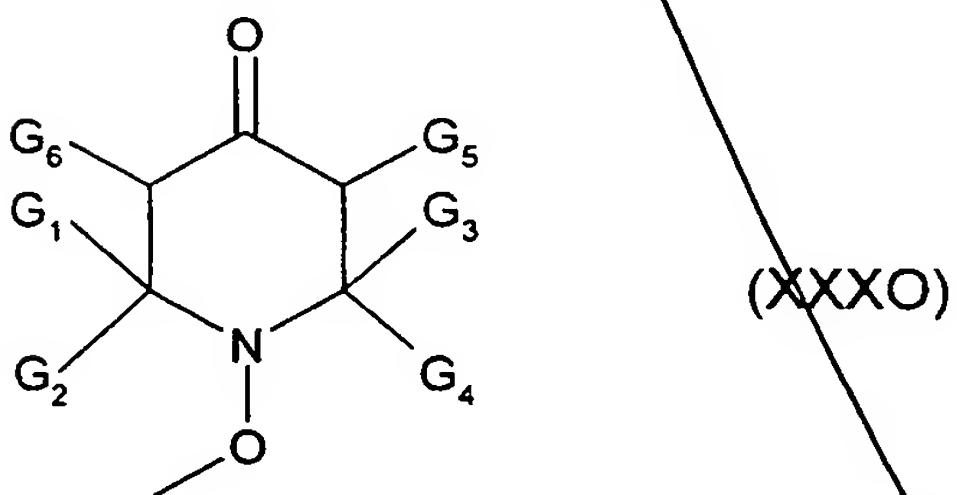
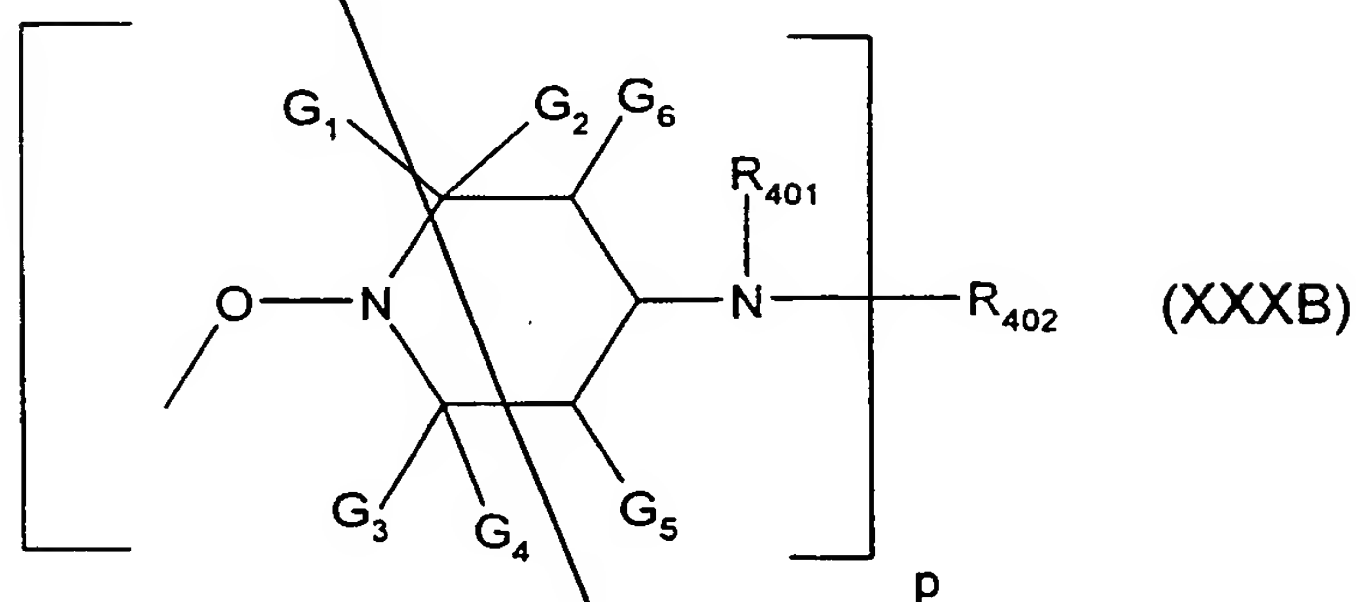
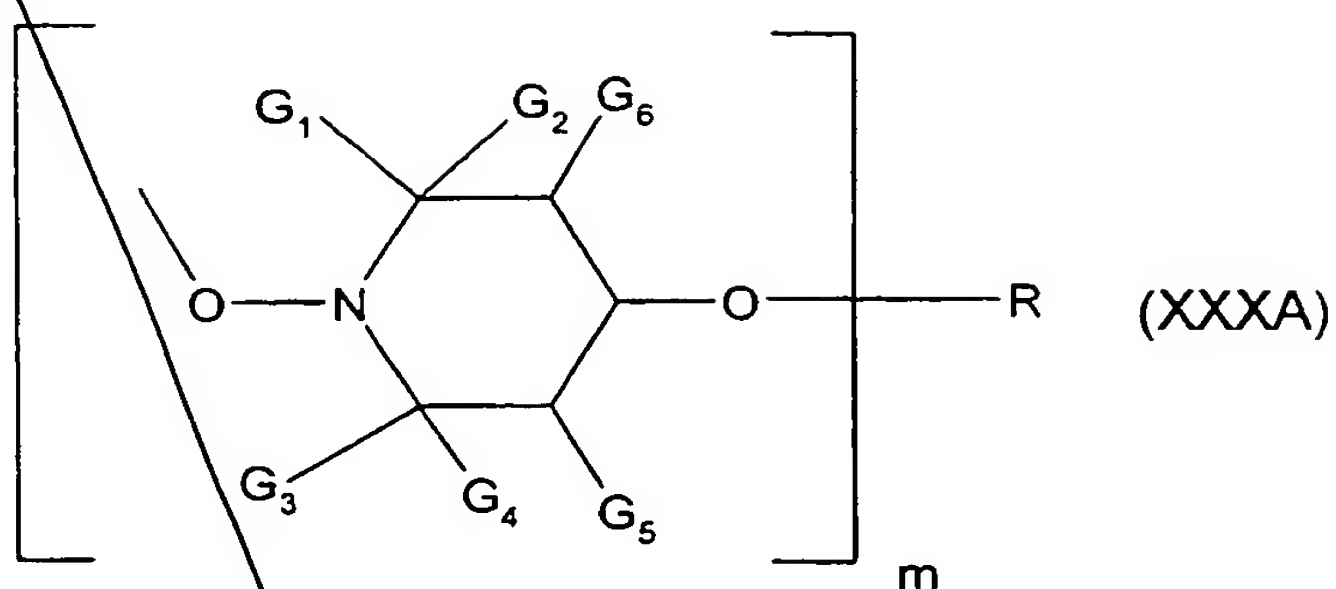
R₂₁₁ is formyl, C₂-C₁₈alkylcarbonyl, benzoyl, C₁-C₁₈alkyl, benzyl or phenyl and

R₂₁₂ is OH, C₁-C₁₈alkoxy, benzyloxy, NR₂₂₃R₂₂₄, wherein R₂₂₃ and R₂₂₄ are independently of each other hydrogen or C₁-C₁₈alkyl.

or wherein A is a group of formula (XXXA), (XXXB) or (XXXO)

B

10049648-122000



wherein

G_1 , G_2 , G_3 and G_4 are independently alkyl of 1 to 4 carbon atoms, or G_1 and G_2 together and G_3 and G_4 together, or G_1 and G_2 together or G_3 and G_4 together are pentamethylene;

G_5 and G_6 are independently hydrogen or C_1 - C_4 alkyl;

m is a number from 1-4;

p is a number from 1-3;

R , if m is 1, is hydrogen, C_1 - C_{18} alkyl which is uninterrupted or C_2 - C_{18} alkyl which is interrupted by one or more oxygen atoms, cyanoethyl, benzoyl, glycidyl, a monovalent radical of an aliphatic carboxylic acid having 2 to 18 carbon atoms, of a cycloaliphatic carboxylic acid

having 7 to 15 carbon atoms, or an α,β -unsaturated carboxylic acid having 3 to 5 carbon atoms or of an aromatic carboxylic acid having 7 to 15 carbon atoms, where each carboxylic acid can be substituted in the aliphatic, cycloaliphatic or aromatic moiety by 1 to 3 $-\text{COOZ}_{12}$ groups, in which Z_{12} is H, $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{12}$ alkenyl, $\text{C}_5\text{-C}_7$ cycloalkyl, phenyl or benzyl; or R is a monovalent radical of a carbamic acid or phosphorus-containing acid or a monovalent silyl radical;

R, if m is 2, is $\text{C}_2\text{-C}_{12}$ alkylene, $\text{C}_4\text{-C}_{12}$ alkenylene, xylylene, a divalent radical of an aliphatic dicarboxylic acid having 2 to 36 carbon atoms, or a cycloaliphatic or aromatic dicarboxylic acid having 8-14 carbon atoms or of an aliphatic, cycloaliphatic or aromatic dicarbamic acid having 8-14 carbon atoms, where each dicarboxylic acid may be substituted in the aliphatic, cycloaliphatic or aromatic moiety by one or two $-\text{COOZ}_{12}$ groups; or

R is a divalent radical of a phosphorus-containing acid or a divalent silyl radical;

R, if m is 3, is a trivalent radical of an aliphatic, cycloaliphatic or aromatic tricarboxylic acid, which may be substituted in the aliphatic, cycloaliphatic or aromatic moiety by $-\text{COOZ}_{12}$, of an aromatic tricarbamic acid or of a phosphorus-containing acid, or is a trivalent silyl radical,

R, if m is 4, is a tetravalent radical of an aliphatic, cycloaliphatic or aromatic tetracarboxylic acid;

p is 1, 2 or 3,

R_{401} is $\text{C}_1\text{-C}_{12}$ alkyl, $\text{C}_5\text{-C}_7$ cycloalkyl, $\text{C}_7\text{-C}_8$ aralkyl, $\text{C}_2\text{-C}_{18}$ alkanoyl, $\text{C}_3\text{-C}_5$ alkenoyl or benzoyl; when p is 1,

R_{402} is $\text{C}_1\text{-C}_{18}$ alkyl, $\text{C}_5\text{-C}_7$ cycloalkyl, $\text{C}_2\text{-C}_8$ alkenyl unsubstituted or substituted by a cyano, carbonyl or carbamide group, or is glycidyl, a group of the formula $-\text{CH}_2\text{CH}(\text{OH})-\text{Z}_4$ or of the formula $-\text{CO}-\text{Z}_4-$ or $-\text{CONH}-\text{Z}_4$ wherein Z_4 is hydrogen, methyl or phenyl; or when p is 2,

R_{402} is $\text{C}_2\text{-C}_{12}$ alkylene, $\text{C}_6\text{-C}_{12}$ -arylene, xylylene, a $-\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{-O-B-O-CH}_2\text{CH}(\text{OH})\text{CH}_2-$ group, wherein B is $\text{C}_2\text{-C}_{10}$ alkylene, $\text{C}_6\text{-C}_{15}$ arylene or $\text{C}_6\text{-C}_{12}$ cycloalkylene; or, provided that R_{401} is not alkanoyl, alkenoyl or benzoyl; or

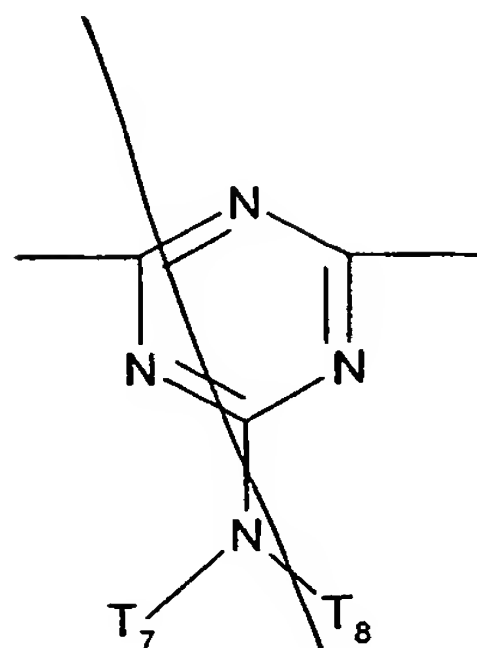
R_{402} is a divalent acyl radical of an aliphatic, cycloaliphatic or aromatic dicarboxylic acid or dicarbamic acid, or is the group $-\text{CO}-$; or

R_{401} and R_{402} together when p is 1 can be the cyclic acyl radical of an aliphatic or aromatic 1,2- or 1,3-dicarboxylic acid; or

R_{402} is a group

b

10019619-122000



where T_7 and T_8 are independently hydrogen, alkyl of 1 to 18 carbon atoms, or T_7 and T_8 together are alkylene of 4 to 6 carbon atoms or 3-oxapentamethylene;

when p is 3,

R_{402} is 2,4,6-triazinyl;

or wherein in formula (XLa) or (XLb)

R_{301} , R_{302} , R_{303} and R_{304} independently of each other are C_1 - C_4 alkyl, which is unsubstituted or substituted by OH, or a group $-O-C(O)-R_{305}$, or R_{301} and R_{302} and/or R_{303} and R_{304} together with the linking carbon atom form a C_5 - C_6 cycloalkyl radical;

R_{305} is hydrogen or C_1 - C_4 alkyl.

R_{306} and R_{307} independently are hydrogen, methyl or ethyl;

Z_1 is O or NR_{308} ;

Q_4 is a direct bond or a divalent radical CH_2 , CH_2CH_2 , $CH_2-CH_2-CH_2$, $C(O)$, $CH_2C(O)$ or $CH_2-CH-CH_3$;

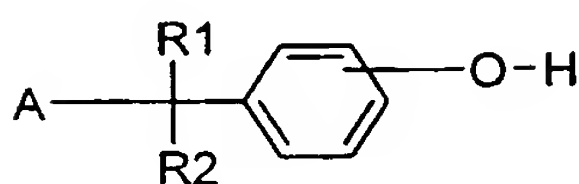
R_{308} is hydrogen, C_1 - C_4 alkyl, C_1 - C_4 alkyl which is substituted by OH, or benzyl.

13. A compound according to claim 11, wherein in formula (XXXA), (XXXB) or (XXXO) G_1 and G_3 are methyl and G_2 and G_4 are ethyl or propyl, or G_1 and G_2 are methyl and G_3 and G_4 are ethyl or propyl.

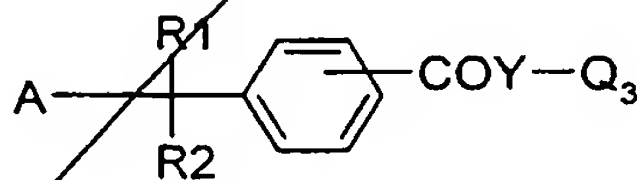
14. A compound according to claim 11, wherein in formula (XXXA) G_1 and G_3 are methyl and G_2 and G_4 are ethyl or propyl, or G_1 and G_2 are methyl and G_3 and G_4 are ethyl or propyl, one of G_5 and G_6 is hydrogen and the other is methyl or both are hydrogen, m is 1 and R is C_1 - C_{18} alkyl or the monovalent radical of a C_2 - C_{18} carboxylic acid.

15. A compound according to claim 11 wherein in formula (XLa) and (XLb) at least two of R_{301} , R_{302} , R_{303} and R_{304} are ethyl, propyl or butyl and the remaining are methyl.

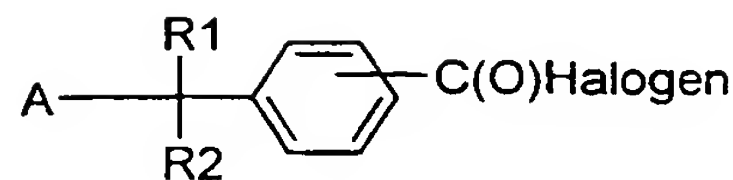
16. A compound of formula (IV), (V), (VI) or (VII)



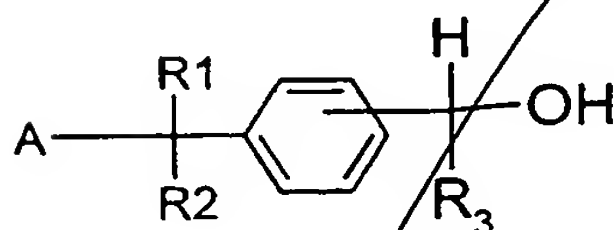
(IV)



(V)



(VI)



(VII)

wherein

R_1 , R_2 , R_3 and A are as defined above;

Y is O, NR_3 or $\text{CR}_3\text{-R}_4$;

Q_3 is hydrogen or $\text{C}_1\text{-C}_4$ alkyl; and

R_4 is hydrogen or halogen;

with the proviso, that if in formula (V) Y is CR_3R_4 and R_3 , R_4 and Q_3 are hydrogen A is not a nitroxyl radical derived from 2,2,6,6-tetramethyl-piperidine.

17. A polymerizable composition, comprising

- a) at least one ethylenically unsaturated monomer or oligomer, and
- b) a compound of formula (I), (II), (III), (IV); (V), (VI) or (VII) according to claim 1 or 16.

18. A polymerizable composition according to claim 1, wherein b) is a compound of formula (I), (II) or (III).

19. A polymerizable composition according to claim 17, wherein the ethylenically unsaturated monomer or oligomer is selected from the group consisting of ethylene, propylene, n-butylene, i-butylene, styrene, substituted styrene, conjugated dienes, acrolein, vinyl acetate, vinylpyrrolidone, vinylimidazole, maleic anhydride, (alkyl)acrylic acid anhydrides, (alkyl)acrylic acid salts, (alkyl)acrylic esters, (meth)acrylonitriles, (alkyl)acrylamides, vinyl halides or vinylidene halides.

Sub A3 → 20. A process for preparing an oligomer, a cooligomer, a polymer or a copolymer (block or random) by free radical polymerization of at least one ethylenically unsaturated monomer or oligomer, which comprises (co)polymerizing the monomer or monomers/oligomers in the presence of an initiator/regulator compound of formula (I), (II), (III), (IV) or (V) according to claim 1 or 16 under reaction conditions capable of effecting scission of the O-C bond to form two free radicals, the •C radical being capable of initiating polymerization.

21. A process according to claim 20, wherein the scission of the O-C bond is effected by ultrasonic treatment, heating or exposure to electromagnetic radiation, ranging from γ to microwaves.

22. A process according to claim 20, wherein the scission of the O-C bond is effected by heating and takes place at a temperature of between 50°C and 160°C.

23. A process according to claim 20, wherein a cooligomer or copolymer of star, comb or block structure is prepared.

24. A process according to claim 20, wherein the compound of formula (I), (II), (III), (IV), (V), (VI) or (VII) is present in an amount of from 0.01 to 30 mol % based on the monomer or monomer mixture.

25. A oligomer, cooligomer, polymer or copolymer prepared by a process according to claim 20.

26. Use of a compound of formula (I) (II), (III), (IV), (V), (VI) or (VII) according to claim 1 or 16 for the polymerization of ethylenically unsaturated monomers.

Add A4 →